



**NO ADVERSE IMPACT**  
**Preserving Our Watersheds**  
**Protecting Our Property Rights**

February 21 and 22, 2008

Fairmont Hot Springs Resort

**Economic Realities –**  
**Health and Human safety-**  
**Infrastructure Impacts**

Karl Christians  
MT DNRC

# Economic Realities:

Montana Land FOR SALE!!! Google search results

Montana Land near water for sale = +228,000 sites

Montana Land near water = +213,000 sites

Montana real estate near water = +229,000 sites

Montana land near water - Google Search

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Google

Montana land near water Search Advanced Search Preferences

Web Results 1 - 10 of about 213,000 for **Montana land near water**. (0.15 seconds)

[Waterfront property for sale fly fishing lakefront land for sale ...](#)  
Built by Biologists: **Water** front, pond property, fish ponds, fishing ponds, ... Waterfront property **montana land** for sale and **montana** lakefront property, ...  
[www.aquahabitat.com/ponds\\_sale.html](http://www.aquahabitat.com/ponds_sale.html) - 20k - [Cached](#) - [Similar pages](#)

[Montana land real estate](#)  
**Water** & sewer hookup fees are paid. Compare the value at \$88000. Broker-Owned ... more info, **LAND NEAR WHITEFISH** Ready to go! Approx. 2 acres, edge of town, ...  
[www.montanabrokers.com/land.htm](http://www.montanabrokers.com/land.htm) - 19k - [Cached](#) - [Similar pages](#)

[Buying an Investment Property in Montana \(Transcript\) | HomeAway ...](#)  
So you want to stay **near** the mountains, the mountains are the ones that collect the **water**, more or less, in **Montana**, and sends it down in aquifers ...  
[ownercommunity.homeaway.com/tip/Resources/Public\\_Pages/Tips/Home\\_Owner\\_Tips/Podcast\\_Transcripts\\_2/Montana](http://ownercommunity.homeaway.com/tip/Resources/Public_Pages/Tips/Home_Owner_Tips/Podcast_Transcripts_2/Montana) - 78k - [Cached](#) - [Similar pages](#)

[ESPN - MONTANA \(October 2006\): Eastern Montana pheasants flush ...](#)  
Eastern pheasants flush, but hunt **near water**. **Montana** hunting map feature ... of private **land** enrolled in Fish, Wildlife & Parks' Block Management Program. ...  
[sports.espn.go.com/outdoors/hunting/news/story?page=h\\_map\\_06\\_MT\\_pheasants](http://sports.espn.go.com/outdoors/hunting/news/story?page=h_map_06_MT_pheasants) - 56k - [Cached](#) - [Similar pages](#)

[ESP - MONTANA \(October 2006\): Eastern Montana pheasants flush ...](#)  
Eastern pheasants flush, but hunt **near water**. **Montana** hunting map feature ... of private **land** enrolled in Fish, Wildlife & Parks' Block Management Program. ...  
[sports.espn.go.com/outdoors/hunting/news/story?page=h\\_map\\_06\\_MT\\_pheasants](http://sports.espn.go.com/outdoors/hunting/news/story?page=h_map_06_MT_pheasants) - 56k - [Cached](#) - [Similar pages](#)

[Montana Real Estate](#)  
Get information on buying and renting properties with [www.ask.com](http://www.ask.com)

[Montana Ranches & Land](#)  
Patrick Bates Land Co. Representing Premier Properties [www.patrickbatesland.com](http://www.patrickbatesland.com)

[Montana Property For Sale](#)  
Property Listings, Maps, Photos, Aerial Photos, Public Records [www.MontanaMagic.net](http://www.MontanaMagic.net)

[Montana Property for sale](#)  
Room to breathe, wander and serve SW Montana since 1978 [www.amerimont.com](http://www.amerimont.com)

[Montana land for sale](#)  
Easy financing, low down payment Own Montana land today [SigmaProp.com](http://SigmaProp.com)

[Ranchland Properties](#)  
View available ranch property for sale in Montana, Wyoming [northernrockyranches.com](http://northernrockyranches.com)

[Montana Land](#)  
Search 1000's of Land Listings for Sale or Lease **Near You** & [www.LoopNet.com/Montana](http://www.LoopNet.com/Montana)

Montana real estate near water - Google Search

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Montana real estate near water Search Advanced Search Preferences

Web Results 1 - 10 of about 229,000 for **Montana real estate near water**. (0.15 seconds)

[Montana Real Estate - Bozeman Real Estate - Bozeman Water Property ...](#)  
**Montana** White **Water** Rafting. **Montana** Kayaking. **Montana** Water Sports. **Montana** Canoe Trips. **Montana** Golf. **Montana** Surf. **Montana** Real Estate. Bozeman **Montana** ...  
[www.montanasure.com/](http://www.montanasure.com/) - 33k - [Cached](#) - [Similar pages](#)

[Room To Roam](#)  
**Montana's** fastest growth is in rural places **near** rivers, lakes, and forests. ... to your neighbors, your builder, your **real estate** agent, and others. ...  
[water.montana.edu/setback/](http://water.montana.edu/setback/) - 17k - [Cached](#) - [Similar pages](#)

[Real Estate Glossary | Real Estate Terms and Definitions](#)  
Read the comprehensive **real estate** glossary at remax.com to understand **real** ... Natural amenities include a pleasant or desirable location **near water**, ...  
[www.remax.com/residential/real\\_estate\\_101/real\\_estate\\_glossary/index.aspx](http://www.remax.com/residential/real_estate_101/real_estate_glossary/index.aspx) - 45k - [Cached](#) - [Similar pages](#)

[P.M.C. Hill Real Estate Properties for Sale - Near the Water.](#)  
**Real Estate** Sales and Property Management on Scotland Island, Towlers Bay, Elvina Bay, Lovett Bay, Morning Bay, McCarrs Creek, Mackerel Beach and Coasters ...  
[www.pmchill.com.au/near\\_water/sales.htm](http://www.pmchill.com.au/near_water/sales.htm) - 27k - [Cached](#) - [Similar pages](#)

[Montana REAL ESTATE - Deer Lodge Homes for Sale - Tour: 5972](#)  
Deer Lodge, **Montana** real estate for sale, virtual home tours, **ECONOMY**: Natural gas used for fuel

[Montana Property For Sale](#)  
Property Listings, Maps, Pictures, Aerial Photos, Public Records...  
[www.MontanaMagic.net](http://www.MontanaMagic.net)

[NW Montana Real Estate](#)  
Over 6000 NW **Montana** listings Easy to search and view pictures  
[www.DaveObe.com](http://www.DaveObe.com)

[Montana Real Estate](#)  
Find Local **Real Estate** Here. Compare **Real Estate** Offers Online!  
[www.MontanaRealEstateGuide.net](http://www.MontanaRealEstateGuide.net)

## Crunch the numbers...

Prime Farm Land	vs	Scenery Land	vs	Land w/ water
1997 .. \$300 - \$350/ acre		\$500-\$1000		\$2000 per acre
2007 .. \$700/acre		\$1.5K - \$4K		\$20K - \$100K per acre

### Lincoln County, Montana

#### Acreage

0.92 acres

\$109,000.00

Mountain Sentry  
Realty



### **New Listing:** Big Spring Creek Property

Located 15 minutes from Lewistown and a Jet Airstrip  
200 +/- deeded acres includes Both sides of Big Spring Creek  
Quality Brown and Rainbow Trout Fishing  
Waterfowl, Pheasants, & Deer  
More information available soon.  
Email me a brochure on this property.

\$4,000,000



**Economics of an 1800 acre,  
175 AUM working ranch outside Lewistown, MT..**

- A. Sell as “Working ranch”.. \$350,000 (1989)
- B. Sell as “Scenery ranch” .. \$1,850,000 (1999)
- C. Sell as “Scenery ranch” .. 3,850,000 (2006)
- D. Sell as “River Front Ranch” for development .. \$5 mil or more..

How would you sell?







# TEAMWORK

A FEW HARMLESS FLAKES WORKING TOGETHER CAN  
UNLEASH AN AVALANCHE OF DESTRUCTION.

[www.despair.com](http://www.despair.com)

# Health & Human safety:

Sometimes the obvious is not so obvious.....

## Simple Facts:

- Flood waters cause damage.
- More water = more damage
- More impact = more damage
- More damage = more expense
- Less impact = less damage
- less damage = what we all want



## Quiz time

1. Water weighs \_\_\_\_?\_\_ lbs per gallon?
2. \_\_\_\_?\_\_\_\_ GALLONS PER CUBIC FOOT?
3. One Cubic foot of water weighs \_\_\_\_\_?\_\_\_\_\_lbs?

Big Hole River below Big Lake Creek.

Q100 = 9020 CFS (1 fps)

- 562848 lbs at
- 281 tons of water every second



## **Did you know..** (various sources)

- Just six inches of fast-moving flood water can sweep a person off his or her feet.
- Just two feet of water can sweep a car off the road..
- 6 & 9 ..
- Montana has had more than 17 deaths due to flash flooding resulting from ice jams
- Numerous deaths from driving thru flood waters.

Ice jams are a big concern, yet not addressed very often...



Enterprise photos by Garrett Choeri

Gary Olson stands on his back porch next to the Yellowstone River while talking about his flooded property about 13 miles south of Livingston adjacent to Loch Leven fishing access, Thursday morning. He said the ice and water covered more than 20 feet of his lawn, leaving approximately 20 feet of land between his home and the edge of the river.

## Yellowstone ice dam

# River threatens 'dream home'

1-18-07

By Peter Vandergrift  
Enterprise Staff Writer

An ice dam is raising fears as water and ice surround at least one Paradise Valley home.

Gary and Nancy Olson said they could only watch as the Yellowstone River ice jam caused water and ice to rise above flood level and threaten their "dream home." The dam, an expanse of ice that restricts the flow of water, causing the river to rise, became a problem Tuesday.

The Olsons stayed in a hotel Tuesday out of fear of the rising water. The couple returned to their home 13 miles south of Livingston just off U.S. Highway 89 Wednesday to find water and ice above a measuring post they had sunk to monitor water height in the spring.

"It's a lot higher now than in the spring. It must be 6 or 7 feet above normal," Nancy Olson said Thursday.

The Olsons' property was



The driveway to the Olson's home is flooded with ice and water, Thursday, after the Yellowstone River changed direction on Tuesday.

Inundated with water, isolating the house to a peninsula of land Thursday. With icy debris locked together for miles upstream, the Olsons are unsure what will happen in the future.

"We have our bags packed and ready to go," she said.

Out of four homes in the area, the Olsons' is the only one that is threatened at this

time, Belinda Van Nuden of the Park County Department of Emergency Services, said Thursday.

There is not much that can be done to disperse the ice flow, which has also flooded low-lying areas around the Loch Leven fishing access just downstream of the Olsons' property, Van Nuden said.

"Nature started it, and nature's gonna end it," Gary Olson said.

The Olsons built their home in 2000 on an existing foundation. Gary was born and raised in the area and the family lives at the house year-round.

"Those mountains out there are food for my soul and heaven's on the other side," Gary Olson said, pointing at the view of the Absaroka Mountains from his living room.

"I'm gonna ride this thing out," he added.

But with building pressure from upstream, every shift in the ice brings new fears.

"The ice shifted for four minutes yesterday afternoon," Nancy Olson recalled. The sound was a loud cracking, like chunks of Alaskan glaciers breaking off and falling into the sea, she said.

"(The authorities) never would have let us build here if the foundation was not already in. We were grandfathered in," Nancy said.



# Infrastructure...

Water is powerful... The vast majority of damage to publicly owned property is to infrastructure, roads, culverts and bridges.

Things to consider .. Larger bridges/culverts are costly .. Law of diminishing returns..

Roads should be elevated .. Or should they?

Channels migrate naturally, and with man's activity, migrate faster than normal.

# Migration of a bend in E. Gallatin

Table 1 - Channel Migration 1937 - Present		
Period (Yrs)	Approximate Migration (LF)	Rate (LF/Yr)
1937 - 1954 (17)	40	2.4
1954 - 1979 (25)	105	4.2
1979 - 1990 (11)	75	6.8
1990 - Present (11)	45	4.1
1937 - Present (64)	265	4.1

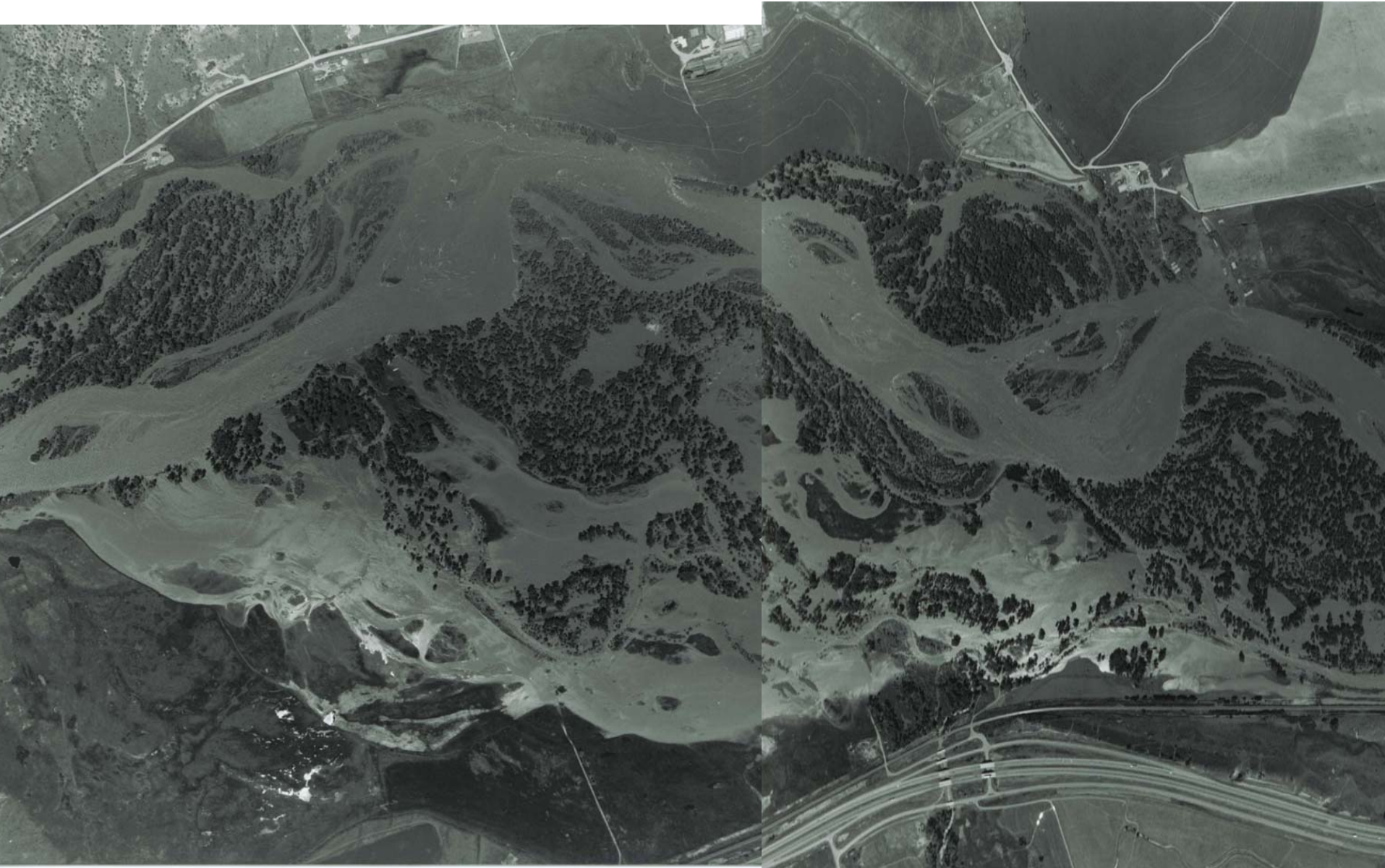
████████████████████, if the river continues it's present trend at the average rate of migration, the river can be expected to encroach on the adjacent house within 5 to 10 years.







# Proper Functioning Floodplain





# UNWRITTEN LESSONS LEARNED IN FLOODPLAIN MANAGEMENT

(any action in a floodplain will have a Reaction)

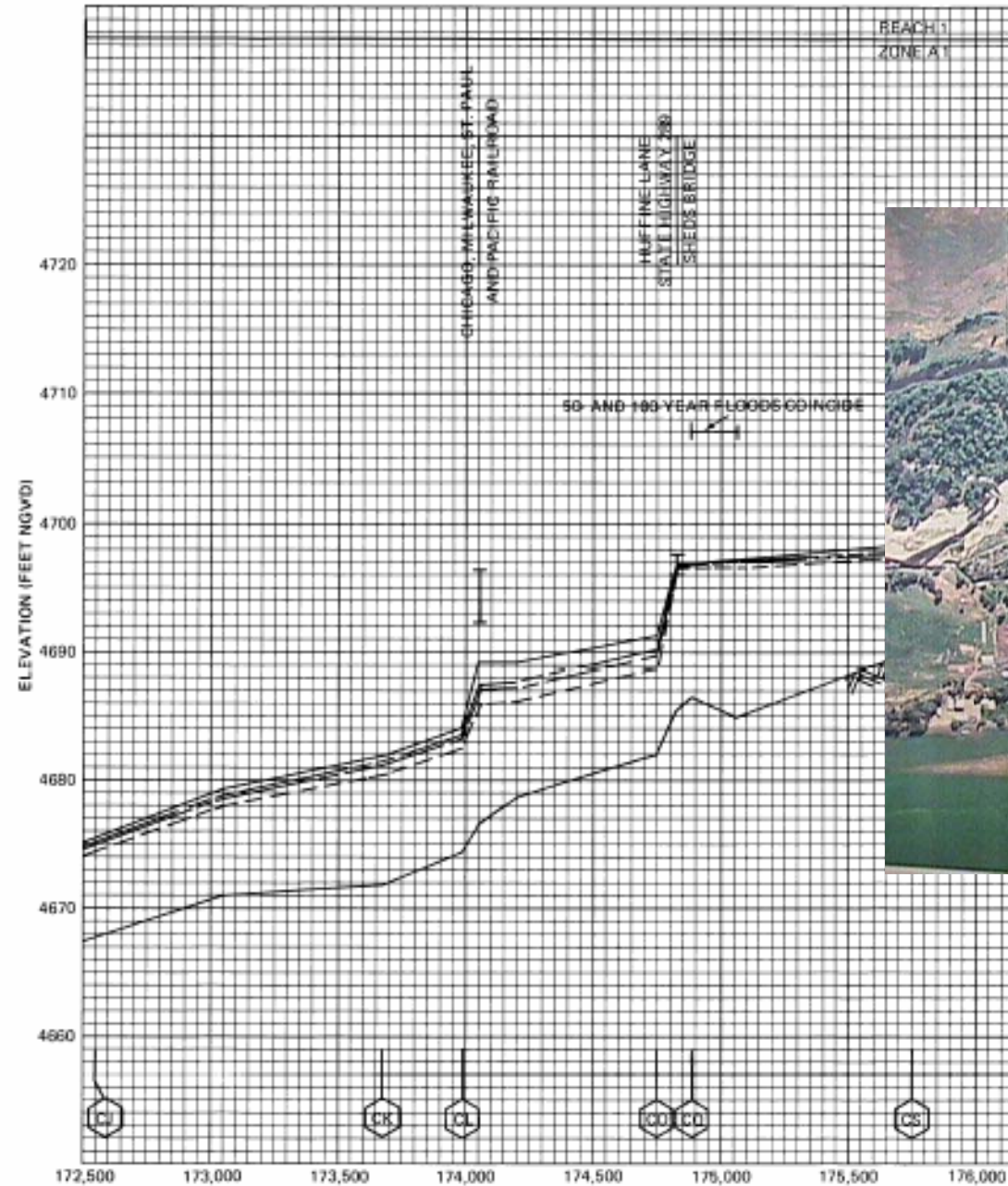
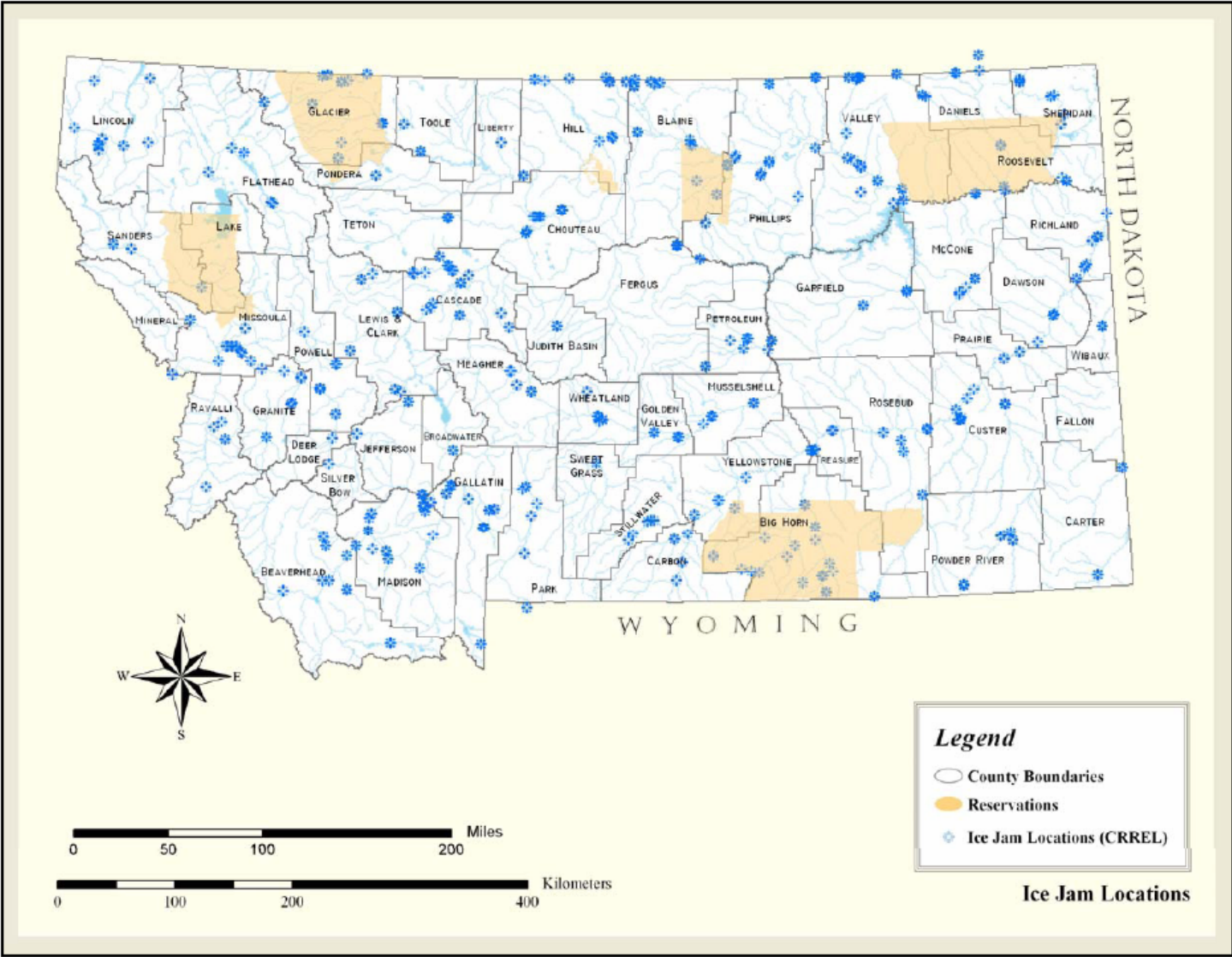








Figure 3.3.2-4 Ice Jam Locations







# The Power of an Ice Jamm gallatin r. 1963



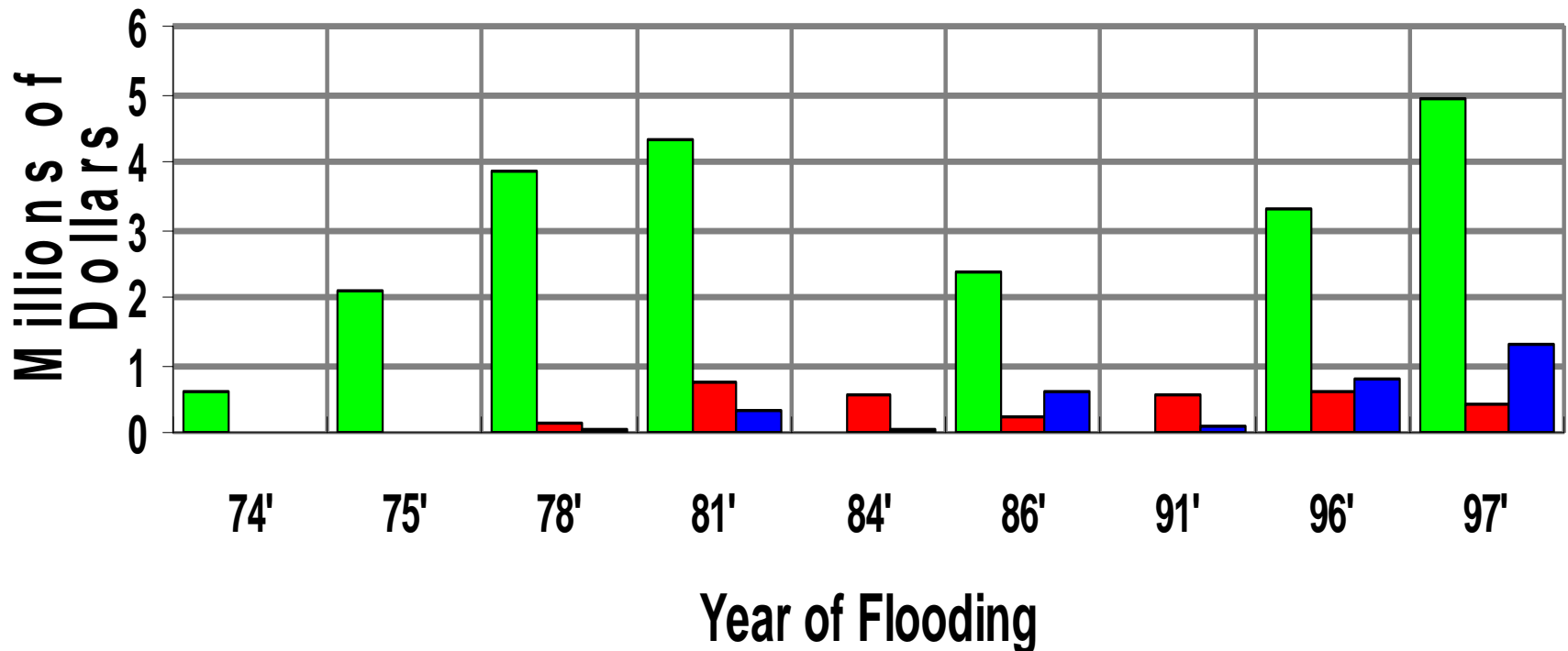
**Table 3.3.2-3 State and Federal Declarations for Flooding in Montana (1974 to April 1, 2004).** Source: MDES, 2004.

Date	State and Federal Declarations (number)	Public Assistance			Individual Assistance		Total
		Federal	State	Local	Federal	State	
1974	FDAA-417-DR-MT	\$603,144					\$603,144
1975	FDAA-472-DR-MT and IFG-267 Grants	\$2,070,551			\$385,023	\$128,341	\$2,455,574
1976	Town of Froid		\$31,268	\$718			\$31,986
1978	FDAA-558-DR-MT and IFG-226 Grants	\$3,838,126	\$140,876	\$25,874	\$465,015	\$155,005	\$4,624,896
1979	Fergus & Petroleum Counties		\$97,048	\$885			\$97,933
1981	FEMA-640-DR-MT; FG-486 Grants	\$4,733,120	\$944,132	\$313,286			\$5,990,538
1984	Beaverhead and Madison County		\$607,600	\$51,559			\$659,159
1986	FEMA-761/777-DR-MT; IFG-106 Grants	\$2,390,854	\$212,442	\$584,501	\$127,209	\$42,403	\$3,357,409
1991	EO 12-91; EO 14-91; EO 15-91; EO 24-91		\$570,459	\$94,849			\$665,308
1993	EO 11-93		\$105,630	\$15,910			\$121,540
1994	EO 04-94; EO 05-94		\$64,156	\$4,339			\$68,495
1995	EO 1-95; EO 15-95		\$38,994	\$385			\$39,379
1996	EO 12-96		\$196,876	\$128,484			\$325,360
1996	EO 3-96; FEMA 1105-DR-MT	\$1,820,739	\$241,888	\$365,006			\$2,427,633
1996	EO 7-96; FEMA 1113-DR-MT	\$1,480,471	\$179,892	\$313,594			\$1,973,957
1997	EO 4-97; 5-97; 6-97; 7-97; 12-97; FEMA-1183-DR-MT	\$5,762,964	\$583,222	\$1,413,362			\$7,759,548
1997	Ice Jams (EO 2-97)		\$1,988				\$1,988
1999	EO 3-99		\$546,305	\$10,062			\$556,367
2001	EO 19-01		\$56,322	\$15,424			\$71,746
2002	Spring Snow Storm (EO 13-02) FEMA 1424-DR-MT	\$1,424,941	\$35,783	\$439,197			\$1,899,921
2003	EO 4-03; 5-03		\$14,260	\$92,898			\$107,861
	<b>TOTAL</b>	<b>\$24,124,910</b>	<b>\$4,669,140</b>	<b>\$3,870,334</b>	<b>\$977,247</b>	<b>\$197,408</b>	<b>\$33,839,742</b>

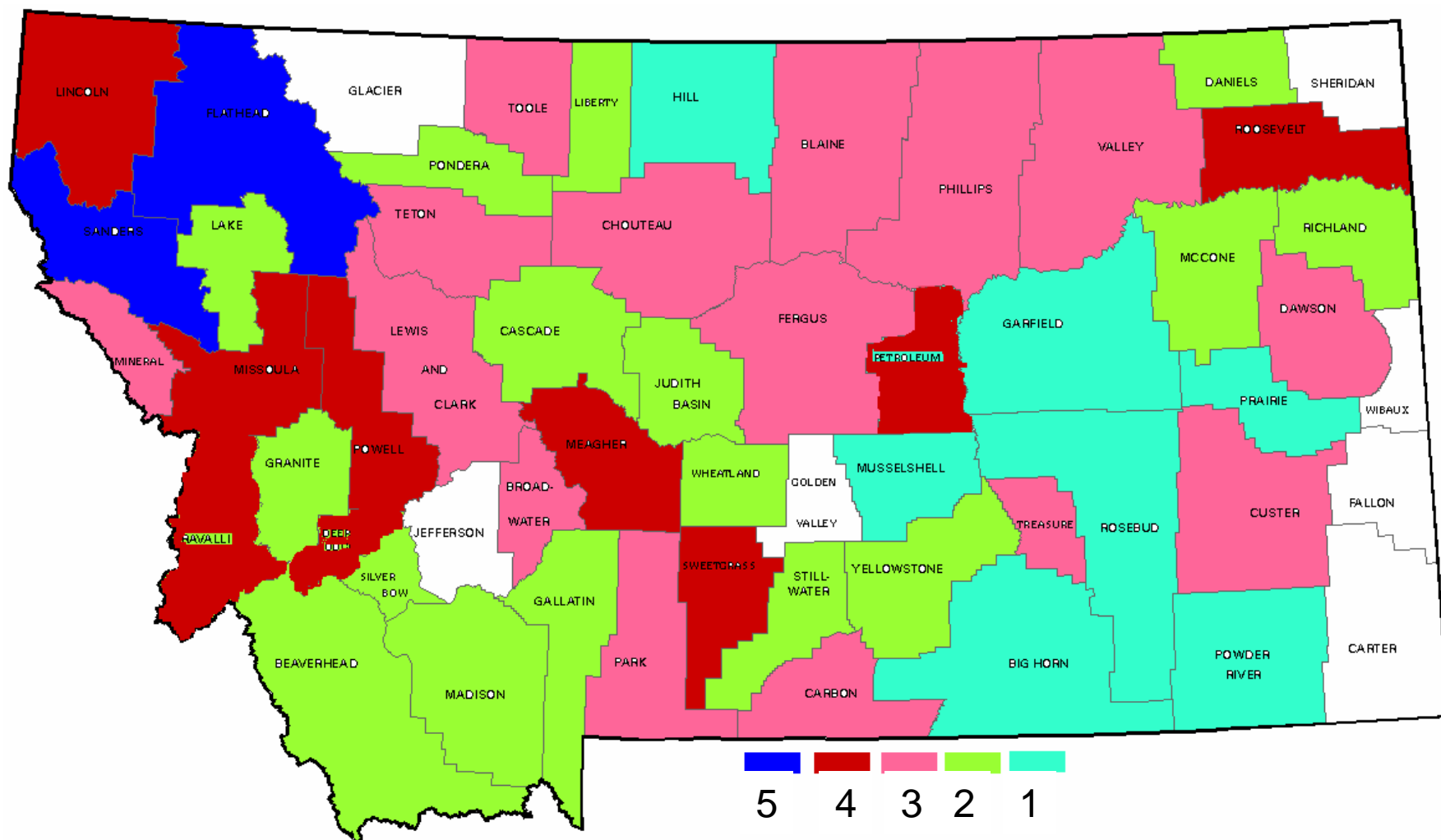
# Montana Flood Related Damage \$\$\$

Public Owned & Eligible Private Non-Profit Facilities Only

■ *Federal Dollars* ■ *State Dollars* ■ *Local Dollars*



# State/Fed Disaster Declarations by County since 1972





## Parting thoughts and simple facts:

Flood waters have damage potential.

More water = more damage

Less development = less damage

More development = more damage

- We have learned from past experience.  
Every Action has a Reaction...





**Thank you for time and Attention..**

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